Name _____ Teacher _____

Date _____ Section _____

Geometry Unit 17: Constructions 2009-2010

Instructions: Complete each construction, showing all work.

For multiple choice questions, select the best choice.

1.

Carl drew an acute angle on a piece of paper and labeled it $\angle FGH$. He then folded the paper using G, the vertex, and overlapping sides GF and GH. When he unfolded his paper, Carl drew a ray from point G on the crease in the paper and labeled this ray GJ. Finally, Carl marked point K on $\overrightarrow{GJ}$ and measured the distance from point K perpendicular to $\overrightarrow{GF}$ and measured from K perpendicular to $\overrightarrow{GH}$. Which of the following describes what Carl may have discovered?

A. He discovered that angle FGJ is congruent to angle FGH.

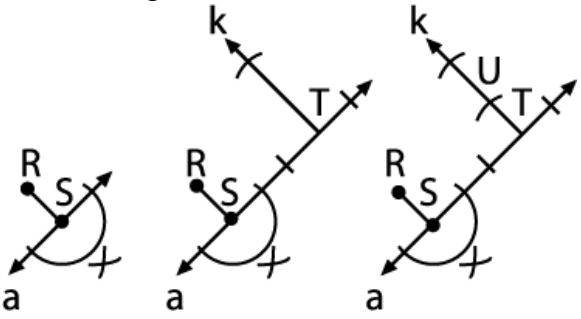
B. He discovered how to construct congruent triangles.

C. He discovered that points on the angle bisector are equidistant from the sides of the angle.

D. He discovered how to measure the degrees in an angle.

2.

Josh is taking a geometry quiz and encounters the following construction:



Josh is asked the following question about the construction: What geometric discovery can be made from the construction? Select the correct answer for Josh.

A. If 2 lines are both perpendicular to a 3rd line, then the lines are parallel to each other.

B. Perpendicular lines create 90 degree angles.

C. Parallel lines never intersect each other.

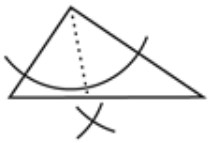
D. The perpendicular bisector contains the midpoint of a line segment.

3.

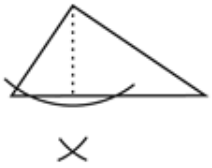
Which of the following represents the construction of an altitude?

A.

B.



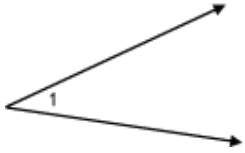
C.



D.

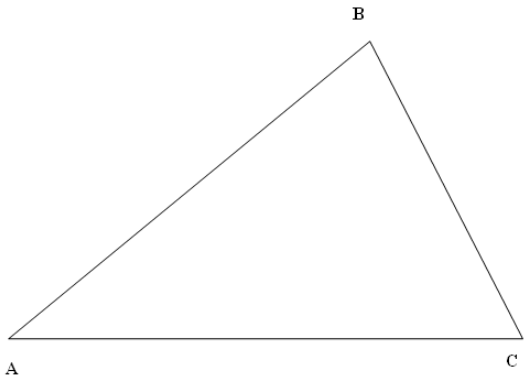
4.

Construct an angle whose measure is twice the measure of the given angle.



5.

In triangle ABC, construct a segment from B to side $\overline{AC}$ at point D so that $\overline{BD}$ is perpendicular to $\overline{AC}$.



6.

Draw an acute scalene triangle. Label it triangle PQR. Use constructions to determine the midpoints of each side. Connect the midpoints to form similar triangle P'Q'R'.

  GO ON

7.
Construct a triangle using 3 segments of your choice. Construct the medians for each side.

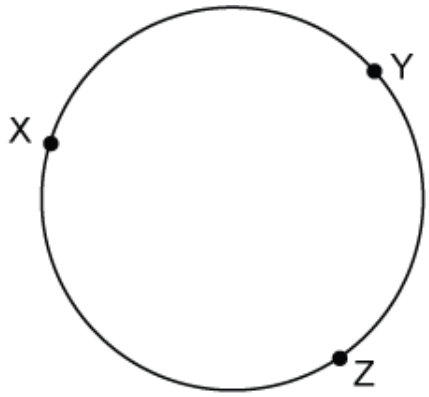
8.
Use a compass to draw a circle and then construct a line tangent to the circle.

9.
Construct a 45-45-90 degree triangle. Name it JKL.

  GO ON

10.

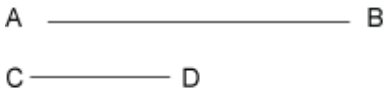
Find the center of the circle below using construction methods. (Hint: Connect the given points to form a triangle.)



11.

Use a compass and a pencil to construct a line and a point near the line, but not on it. Describe how you could use the compass to construct a second line perpendicular to the drawn line through the point.

12.



Construct a line segment that measures 2(AB) - (CD)

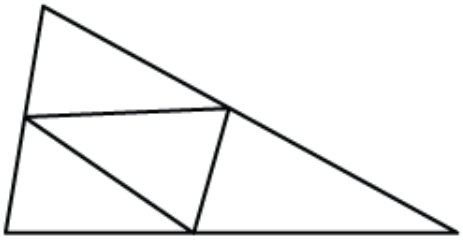
  STOP

Answer Key

#	Item ID	Key	TEKS	Stimulus
1	M0G00029RX	C	G.2A	-
2	MG1098172D	A	G.2A	-
3	MG1152618D	C	G.2A	-
4	MG1098174D	See attached Rubric or Checklist	G.2A	-
5	MG1098176D	See attached Rubric or Checklist	G.2A	-
6	MG1098178D	See attached Rubric or Checklist	G.2A	-
7	MG1098182D	See attached Rubric or Checklist	G.2A	-
8	MG1098184D	See attached Rubric or Checklist	G.2A	-
9	MG1098186D	See attached Rubric or Checklist	G.2A	-
10	MG1098180D	See attached Rubric or Checklist	G.2A	-
11	MG1152620D	See attached checklist	G.2A	-
12	MG1153454D	See attached Rubric or Checklist	G.2A	-

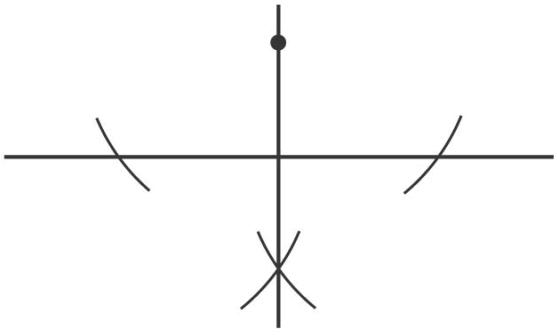
Checklist List

6)



11)

Sample Answer: Draw a line and a point on your paper. Using the compass, put the pointed end of the compass on the point you drew and swing an arc to intersect the line you drew on both its ends, or on either side of the point. Then put the pointed tip of the compass on one of the points where the arc and the line intersected, keeping the degree the compass is extended the same, and swing another arc down on the opposite side of the line from the point. Do the same thing on the other point where the original line and arcs intersected. These two new arcs should intersect on the underside of the line, opposite of the original point. Use a straight edge; draw a line from the point where the arcs intersected through the point and crossing the line.



Rubric List

4)

3	The response shows full understanding of the essential mathematics applicable to the task and a sound approach toward solution that includes logical reasoning and appropriate conclusions. Computation and procedures used are generally accurate, but the response may contain minor computational or procedural flaws that do not detract from evidence of full understanding.
2	The response shows a satisfactory understanding of the essential mathematics applicable to the task, but reasoning may not be completely clear, and there may be minor flaws in computation and/or use of procedures as a result of carelessness or non-essential misunderstandings. The flaws do not detract from evidence of satisfactory understanding. A score of 2 may also be earned if the response is partially correct but some aspect of the task is omitted.
1	The response indicates limited understanding of the essential mathematics applicable to the task. While an effort is made to address the task, omissions and/or errors related to insufficient mathematical knowledge or incorrect application of skills or procedures bring into question that student's ability to deal successfully with tasks of this type.
0	The response indicates no understanding of the essential mathematics applicable to the task, or there is no response.

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